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EDUCATIONAL INTERPRETIVE PROGRAMS FOR
ECOTOURISM DESTINATIONS

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Environmental Education

by
Rachael Anne Hamilton

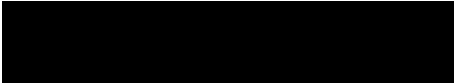
December 2006

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Approved by:



Dr. Darleen Stoner, First Reader



Dr. Thom Gehring, Second Reader

October 24, 2006

Date

ABSTRACT

Five interpretive programs were designed that could be used by educators, naturalists and interpreters working at ecotourism destinations. The topics of the programs include environmentally responsible behavior for visitors, the value of participating in on-site recycling programs, the significance of renewable energy systems, and the importance of conserving both animal and native plant diversity. This project takes potentially complicated, yet wide-ranging, environmental concepts and issues and presents them in understandable ways so tourists can be more informed and motivated to take environmentally positive action during their stay.

ACKNOWLEDGMENTS

Thanks to Dr. Darleen Stoner and Dr. Thom Gehring for their assistance throughout the entire writing process of this project.

DEDICATION

This project is dedicated to all the individuals in the world working to raise awareness in order to stop the paving of paradise, as well as to my family who inspired a strong personal environmental ethic by supporting and encouraging visits to some of the most awe-inspiring and biologically rich places on Earth.

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CHAPTER ONE

INTRODUCTION

Welcome to paradise- while it lasts. As villages and tribal cultures become commodified and turned into megaresorts and shopping malls, some travel agents are marketing threatened areas as places to see before they are gone. (McLaren, 1998, p. 27)

The above passage exemplifies the grave situation that popular tourist destinations are currently facing. Because of the rapid increase of tourism to fragile ecosystems, many of the world's most unique regions are being overrun by vacationers who inadvertently contribute to their destruction.

As a rising number of people seek to find serenity and adventure in the last exotic and unspoiled environments, it is becoming increasingly evident that the places for which they search are, in reality, at risk of being destroyed. Ecotourism, nature tourism, adventure tourism, and other recently emerging sectors of the tourism industry have been attempting to prevent this scenario from occurring. However, upon closer examination it is clear that not all tourist destinations and

organizations claiming to be ecologically sensitive actually promote sustainable activities (Honey, 1999; United Nations Environment Programme, 2002; Wagner, 2005).

An essential part of the solution to this critical problem lies within fulfilling the comprehensive definition of ecotourism by integrating education into the frameworks of ecotourism destinations. The incorporation of education through interpretive programs which emphasize principles of environmental systems may result in heightened awareness of the importance of protecting the very destinations that are being eagerly sought after. Because ecotourism commonly takes place in some of the most biologically rich and ecologically sensitive regions of the world, it is especially imperative to instill a sense of environmental and ecological awareness so tourists can gain a basic understanding of how the surrounding natural systems function, and thus, the reasons why it is important to make responsible decisions while staying in the region. Consequently, targeting travelers with this type of education can be seen as an avenue to aid in the protection of these last remaining open spaces.

I have been privileged to have had the opportunity to see some of the remote places left on Earth. Through my travels I have swam with sea lions off the turquoise coasts of the Galapagos Islands, trekked through lush Ecuadorian Amazon rainforest, and listened to the deafening roar of Howler Monkeys in Belize. These travels left me with a passion not only to visit as many other awe-inspiring destinations as possible, but also to work toward ways to protect these biological treasures.

The following pages entail a literature review addressing the rise of tourism and ecotourism, and the essential partnership between educational programs and ecotourism. This project provides five educational interpretive programs for ecotourism destinations with the goal of increasing environmental awareness, and consequently promoting responsible actions, among tourists (see Appendix). The intended audience includes educators, interpreters, and naturalists working with the development of sustainable ecotourism destinations. Through these educational interpretive programs, visitors will be presented with the knowledge and motivation to make informed decisions throughout their travels. The proposed interpretive programs can be adapted to work in

a variety of regions, from the Redwood National Parks in California, to the grassland savannahs in Africa, to the turquoise waters of the Caribbean.

CHAPTER TWO

LITERATURE REVIEW

Introduction

As more and more vacationers seek destinations with pristine water, unobstructed views, majestic mountains, and other awe-inspiring natural elements, it is becoming evident that the tourist and the tourism industry are actually contributing to the destruction of the very surroundings for which they search. In order to gain perspective on this issue, it is necessary to reflect on the rise of tourism, as well as the rise of ecotourism and its associated problems and promises. In addition, it is also crucial to consider the vital partnership between ecotourism and education as part of the solution to protecting these typically fragile ecosystems.

The Rise of Tourism

As advancements in transportation technology increased, so did the rise in mass tourism. In particular, modern tourism began with the rise of the automobile industry, road and highway systems, and improvements in aircraft travel in the 1960s (McLaren, 1998). With this newfound ease of travel, the number of

people seeking to experience unique environments spiraled upward.

The World Tourism Organization (UNWTO), the specialized agency of the United Nations and the leading international organization in the field of tourism, forecasted that international tourist arrivals alone are expected to reach over 1.56 billion by the year 2020 (2005c). Staggering growth statistics for the past century have demonstrated tourism's potential for social, economic, and environmental effects on countries around the world (Wagner, 2005; World Tourism Organization, 2005b). Even with the events of September 11, 2001, statistics are displaying that the resilient travel industry is bouncing back (Moss, 2002),

At the opening of the 21st century, tourism unquestionably became established as the number one industry in many countries (World Tourism Organization, 2005a). Tourism "...has become a vast and complex enterprise that includes transportation (airlines, airports, trains, cruise lines, automobiles, and rental car agencies); hotels, resorts, and vacation villages; the food industry; travel agencies and operators; and recreational and cultural promoters..." (McLaren, 1998,

p. 14). According to the World Tourism Organization, numerous nations cite tourism as their fastest growing economic sector, and in addition, note tourism as a key motivator for large investments in infrastructure (2005a). Furthermore, tourism is seen as the world's largest export earner, as well as one of the world's most significant sources of employment (World Tourism Organization, 2005a). All of these figures make it clear that the magnitude of impending effects on the environment resulting from industrial tourism is significant.

Titanic waves of visitors, and all of the accoutrements that coincide with tourism, can result in considerable environmental impacts (Johnson, 2006). In the novel *Desert Solitaire*, revered nature-writer Edward Abbey noted the beginnings of this phenomenon in America's beloved national parks even in the late 1960s after making ominous forecasts about the fate of Arches National Park in Utah. On one of his later visits back to Arches, Abbey described the state of the national park that had been overrun with tourists:

The little campgrounds where I used to putter around reading three-day-old newspapers full of lies and

watermelon seeds have now been consolidated into one master campground that looks, during the busy season, like a suburban village: elaborate housetrailer of quilted aluminum crowd upon gigantic camper-trucks of Fiberglass and molded plastic.... (1968, p. 55)

In a tone of defeat Abbey proclaimed, "Industrial Tourism has arrived," as he lamented over the idea that with the coming of mass tourism, comes the destruction of the beautiful places that the tourists actually seek (1968, p. 55). Sadly, he stated, "...the road has been paved, the campground enlarged and 'modernized,' and the old magic destroyed" (p. 56). Presently, Arches is suffering from the effects of its one million annual visitors who turn the sage and juniper dotted national park into a playground for jeep enthusiasts where the natural countryside is thus trampled under a flood of people and their highly destructive cars (Schlender, 2002). This pattern of development and behavior has taken place all over the world under the guise of tourism.

The Grand Canyon is another prime example of a destination that has suffered from the negative effects of tourism. Once again, Abbey (1968) observed on his

visits to the Grand Canyon that it was no longer easy on the South Rim to get away from the sounds of motor traffic. Currently, the Grand Canyon National Park announces to eager visitors of the South Rim that they should anticipate traffic congestion, parking problems, and pollution, especially if visiting in the summer (Grand Canyon National Park, 2005). Even the bothersome roar of vehicle traffic is becoming increasingly common in places once thought of as virgin wilderness because of the growth of giant infrastructures, such as roads and other transportation routes that coincide with tourism development (McLaren, 1998).

This degrading cycle of development is occurring at disturbing rates throughout the world where many of the areas are considered to be the most important and biologically diverse regions of the Earth (Fennel & Weaver, 2005; Johnson, 2006; McLaren, 1998; Niesenbaum & Gorka, 2001). The following passage exemplifies how these biologically rich surroundings on which the tourism industry depends are facing a crisis as increasing numbers of vacationers place pressure on the fragile ecosystems:

The large numbers of tourists going to these places greatly exceed the carrying capacities - the amount of people a land can accommodate without ecological degradation. Most tourism destinations are energy intensive and highly pollutive and tend to be built in 'cluster sites,' such as a chain of hotels along a beach. It...puts heavy stress on the environment, since tourist sites require reconstruction of the landscape and increased use of petroleum products and toxics such as chemicals, fertilizers, and pesticides. (McLaren, 1998, p. 89)

The known fate of Arches National Park and Grand Canyon National Park are, unfortunately, the familiar outcome of a beautiful landscape that suffers from being discovered by the multitudes of eager, yet careless travelers (McLaren, 1998). Once exposed, the vulnerable site is usually faced with swarms of sightseers who flock to get a glimpse of its beauty, and if not responsibly planned and managed, the millions of vacationers can inflict irreparable damage on the area (Johnson, 2006; World Tourism Organization, 2005a).

Fortunately, a few remote places remain relatively unspoiled by the hands of travelers. Nevertheless,

predictions and marketing trends point to the eventual discovery of those untainted places, such as the Amazon, the Himalayas, tribal areas in Africa, and aboriginal areas of Australia (McLaren, 1998). In order to avoid the same outcome from taking place at these last remaining locations, action needs to be taken to prevent irresponsible tourism and promote ecologically sensitive practices (Fennel & Weaver, 2005).

Conversely, not everything about tourism is inherently negative. Tourism can be seen as way to propel regional economic growth, especially in developing countries where tourism promises jobs, economic development, and infrastructure improvement (Honey, 1999; McLaren, 1998; Mowforth & Munt, 1998; World Tourism Organization, 2005a). When used responsibly, tourism can also be used as a valuable tool in conservation and education of diverse environments around the world as illustrated by the following:

Travel can educate tourists about other places and peoples; it can also help them better understand their own culture and society. In an age where we are overwhelmed with images...travel can be an important way for us to communicate directly with

one another. No computer, travel brochure, or television can ever replace that. (McLaren, 1998, p. 41)

The key, however, to having both a sustainable tourism industry and guaranteed protection of the areas to which tourists vacation, is to raise awareness and promote sustainable activities (Fennel & Weaver, 2005; Highham & Carr, 2003; Twidale & Bourne, 2003). For this reason, ecotourism emerged as a fresh and hopeful field which promised to fulfill both those needed requirements.

Martha Honey, the current executive director of The International Ecotourism Society (TIES) claimed, "Because the tourism industry, more than any other, depends on a clean environment, it has embraced ecotourism as a means of survival" (1999, p. 20).

The Rise of Ecotourism

Ecotourism materialized under the wing of the environmental movement, took hold in the early 1970s, and then gained power and popularity in the 1980s (Honey, 1999). The basis behind the emergence of ecotourism included the desire to conserve the environment, to provide "nature-based and adventure travel," and to serve

"the growing tourist demand for more 'authentic' experiences" (McLaren, 1998, p. 98). As a concern for the environment increased, as well as a desire to see the last remaining unspoiled locations on Earth, people started to take a break from polluted city life to visit these beautiful places. Honey (1999) alleged that because people were "turned off by overcrowded, unpleasant conditions and spurred by the relatively affordable and plentiful airline routes, increasing numbers of nature lovers began seeking serenity and pristine beauty..." (p. 11). Thus, ecotourism took hold among travelers.

Since then, ecotourism has grown tremendously as a sector in the tourism industry and has been labeled a big business in itself (McLaren, 1998). "It [ecotourism] has greatly expanded jobs for tourism corporations, adventure travel companies, environmental organizations, and governmental officials" (McLaren, 1998, p. 101). Current statistics estimate that in the U.S. alone, "13% of U.S. outbound travelers are ecotourists," and ecotourism spending amounts to an estimated \$77 billion market (Honey, 2005, ¶ 11).

In sync with the development of ecotourism, other similar tourism sectors have since emerged such as nature

tourism and adventure tourism. However, "...ecotourism, properly understood, goes further, striving to respect and benefit areas as well as the people living around or on these lands" (Honey, 1999, p. 3). Another key defining feature of ecotourism, which distinguishes it from conventional tourism and the other rising categories of nature tourism, is the promise of educating and raising awareness among the visitors (Fennel & Weaver, 2005; Honey, 1999; McLaren, 1998; Mowforth & Munt, 1998; Twidale & Bourne, 2003).

Honey (1999) stated, "In 1991, The Ecotourism Society coined what I found to be the most succinct yet encompassing definition of ecotourism: 'Responsible travel to natural areas that conserves the environment and improves the well-being of local people'" (p. 6). The essence of ecotourism is captured by the following comprehensive definition:

Properly defined, then, ecotourism is travel to fragile, pristine, and usually protected areas that strives to be low impact, and (usually) small scale. It helps educate the traveler; provides funds for conservation; directly benefits the economic development and political empowerment of

communities; and fosters respect for different cultures and for human rights. (Honey, 1999, p. 25)

Much advancement has been made on the forefront of ecotourism since its recognized entrance in the 1970s. The International Ecotourism Society (TIES), founded in 1990, boasts to be the largest and oldest ecotourism organization in the world (2006a). The organization currently has members in more than 70 countries and includes those ranging from consultants to conservation professionals, governments to architects, and tour operators to ecotourists (The International Ecotourism Society, 2006a). In order to promote sound ecotourism development, TIES strives to provide guidelines and standards, training, technical assistance, research, and publications (The International Ecotourism Society, 2006a). The mission of TIES is as follows:

to promote responsible travel to natural areas that conserves the environment and improves the well-being of local people by: creating an international network of individuals, institutions and the tourism industry; educating tourists and tourism professionals; and influencing the tourism industry, public institutions and donors to

integrate the principles of ecotourism into their operations and policies. (The International Ecotourism Society, 2006a, ¶ 2)

Some of TIES most significant initiatives over the years include working with the Charles Darwin Foundation to address problems caused by massive tourism in the Galápagos Islands, hosting the first international forum on ecolodge design and development at Maho Bay Camps in the U.S. Virgin Islands, and co-hosting a conference in Ecuador, as well as one in Kenya to develop ways in which to guarantee ecotourism benefits reach local communities (The International Ecotourism Society, 2006a). TIES also developed the first set of inclusive guidelines for ecotourism operators, and then defined international standards for ecolodge development (2006a). More recently, in 2000 the first consumer education campaign was launched, and in 2002 TIES supported and participated in the designated International Year of Ecotourism (2006a). Furthermore, in 2003 TIES partnered with The Center on Ecotourism and Sustainable Development (The International Ecotourism Society, 2006a).

While TIES works diligently on promoting sustainable ecotourism, other organizations are also taking

initiatives of their own. The World Tourism Organization (UNWTO) developed the Sustainable Tourism Development Section to ensure the sustainable development and management of ecotourism (World Tourism Organization, 2005a). Some of this section's most recent major projects include designating 2002 as the International Year of Ecotourism and jointly organizing a World Ecotourism Summit in Quebec, Canada in 2002 with the United Nations Environment Programme (2005a).

The Sustainable Tourism Development Section was also actively involved in the World Summit on Sustainable Development that took place in Johannesburg in 2002 (World Tourism Organization, 2005a). Moreover, this division of the UNWTO is in the process of publishing manuals for tourism planning at the national, regional and local levels, manuals on indicators of sustainable ecotourism, and collections of model case studies of sustainable ecotourism (World Tourism Organization, 2005a). Additionally, the Sustainable Tourism Development Section is involved in the organization of national seminars on tourism planning (2005a).

As mentioned above, 2002 was designated as the International Year of Ecotourism (IYE). According to the

United Nations Environment Programme (UNEP), "This year should be used to firmly entrench those values [of ecotourism] and to raise awareness of best practice - so that all can learn, and understand fully, what is meant by truly sustainable ecotourism" (United Nations Environment Programme, 2002, ¶ 13). The goals of the World Tourism Organization and the United Nations Environment Programme for the 2002 International Year of Ecotourism included the following four objectives:

Generate greater awareness among public authorities, the private sector, the civil society and consumers regarding ecotourism's capacity to contribute to the conservation of the natural and cultural heritage in natural and rural areas, and the improvement of standards of living in those areas; disseminate methods and techniques for the planning, management, regulation and monitoring of ecotourism to guarantee its long-term sustainability; promote exchanges of successful experiences in the field of ecotourism; increase opportunities for the efficient marketing and promotion of ecotourism destinations and products on international markets. (United Nations, 2003, ¶ 4)

Following the conclusion of 2002, The World Tourism Organization reported on the outcomes of the actions undertaken by nations and major organizations in light of the IYE based on the following main themes: national policy, activities and publications, stakeholders' participation and support, awareness raising, regulation, and cooperation (World Tourism Organization, 2005d). The report revealed that while there was still room for improvement, a wide range of activities were motivated by the IYE that enhanced the quality of both ecotourism and conventional tourism as well (2005d). The year 2002 "served to stimulate the replication of good practices among governments and private companies, and as a strong engine for innovative programs and projects" (2005d, ¶ 4).

In addition, other advancements in the development of sustainable ecotourism have also recently been made, including the development of The Rainforest Alliance. The Alliance advocates for sustainable ecotourism and the preservation of biologically rich ecosystems and indigenous cultures (Rainforest Alliance, 2006a). Their Sustainable Tourism Program currently works with tourism entrepreneurs and community-based businesses, primarily

in Latin America, by providing them with training and information on environmentally and socially sound management (2006a).

In 2003 the Rainforest Alliance and Sustainable Tourism Division finished a study to investigate the possibility for establishing an international accreditation organization for sustainable tourism certification (Rainforest Alliance, 2006b). One of the essential outcomes of the study was the launch of the Sustainable Tourism Certification Network of the Americas (Rainforest Alliance, 2006b). This Network "constitutes one of the components of an international partnership effort being led by the Rainforest Alliance and The International Ecotourism Society to promote integration of sustainability into tourism policies and higher environmental and social standards for tourism" (2006b, ¶ 2).

With the concept of certification for ecotourism marked as a high priority among ecotourism advocates, the United Nations Environment Programme (UNEP), in cooperation with TIES and The Rainforest Alliance, held a meeting on sustainable tourism certification during the World Tourism Forum for Peace and Sustainable Development

in Rio de Janeiro, Brazil in October, 2005 (Bien, 2005).
"This meeting served as the most important international event to assess 'green' tourism certification programs and a global accreditation body since...the completion of the Rainforest Alliance's feasibility study in 2003" (Bien, 2005, ¶ 1).

The purpose of the meeting was to study the worth of certification programs and to propose solutions to the current problems with representatives of certification programs from organizations all over the world, including the World Tourism Organization, the International Organization for Standardization's Technical Committee on Tourism, the International Social and Environmental Accreditation and Labeling Alliance (ISEAL), and Tourism Concern (Bien, 2005). "The principal result of the meeting was a recommendation to pursue a possible Sustainable Tourism Stewardship Council and to establish a steering committee to supervise a study of its financial feasibility, as well as operational issues" (Bien, 2005, ¶ 8).

Also in 2005, TIES held a three day Conference on Ecotourism in the U.S. in Bar Harbor, Maine where an estimated 300 participants attended from different states

all the way from Hawaii to New Mexico, to Puerto Rico. The significance of this meeting was that it marked the first time that ecotourism supporters from the U.S. had met to discuss what was happening specifically in the United States (Honey, 2005).

The result of the Bar Harbor conference was a realization that while not always carrying the ecotourism label associated with ecotourism-magnet countries like Costa Rica and Belize, the U.S. is still a great promoter of the principles of ecotourism (Honey, 2005). In actuality, the conference demonstrated that ecotourism can find its roots deep in U.S. history starting with Native Americans, to thinkers of the 19th and 20th century like John Muir, Edward Abbey, and Rachel Carson, and also in the foundations of the national park system located in the U.S. (Honey, 2005). Maho Bay Camps, located in the U.S. Virgin Islands and built in 1976 by New York developer, ecotourism leader, and TIES Board member Stanley Selengut, was used to highlight the contributions of the United States in the field of ecotourism; Maho Bay Camps is seen as the first ecolodge developed by the United States (Honey, 2005). The goal of the Bar Harbor conference was to initiate an effort to

place ecotourism in the United States as a central idea on the national agenda (Honey, 2005).

TIES is currently taking action to help make this goal a reality by laying plans for the next national ecotourism conference to be held in Madison, Wisconsin in 2007 (Honey, 2005). In planning for the Madison conference, TIES has issued a call to the U.S. government by using "The Bar Harbor Declaration on Ecotourism in the U.S.: A Road Map for Responsible Tourism Development" (Honey, 2005). This document calls on the U.S. government "to adopt a series of policies to promote socially and environmentally responsible tourism" (p. 3) and lists 15 different steps to be taken at national, state, and local government levels, so that successful ecotourism is guaranteed to be realized. With the end of their 15th year anniversary, which was marked by the Bar Harbor Conference, the leaders at TIES stated that they

...envision, as the Bar Harbor Declaration concludes, that this signals 'the start of a broad-based ecotourism initiative within our country, joining similar movements and organizations around the world that are working to make tourism a positive force for economic development and

~

safeguarding the natural and cultural heritage of
our planet.' (in Honey, 2005, ¶ 15)

The Problems and Promises of Ecotourism

The promises of ecotourism are substantial. However, many have criticized the field because of the recent greenwashing of the term (Fennel & Weaver, 2005; Honey, 1999; McLaren, 1998; Wagner, 2005). "...Critics argue that the definition of 'ecotourism' is so broad that almost any travel would qualify, as long as something green was seen along the way" (McLaren, 1998, p. 97).

Honey (1999) coined the term "ecotourism lite" to describe mainstream ecotourism that is often described with catchy phrases such as "treading lightly on the earth" and "taking only photographs, leaving only foot prints" (p. 48). In reality however, "Much of what is marketed as ecotourism is simply conventional mass tourism wrapped in a thin veneer of green" (p. 51).

This thin veneer of green can do as much harm to the environment as conventional industrial tourism when not practiced with the highest care because it still threatens the very delicate ecosystems on which it

summed this concept up by pronouncing, "The original designers of ecotourism realized that ecotourists were loving nature to death..." (p. 99).

Along with lasting apprehension over the potential destruction of fragile environments caused by the sheer numbers of exploring ecotourists, there was also the rising concern over accepted standards and certification for true ecotourism. According to the Rainforest Alliance, "the lack of a globally accepted standards and criteria for 'sustainable tourism' and 'ecotourism,' has led to negative social and environmental impacts" (2002, p. 294). The Rainforest Alliance also commented that while the use of certification tools to "green" the tourism industry as a whole is valid, there is also "...a strong need to distinguish certification programs that certify sustainable tourism and ecotourism from those that target mainstream tourism" (2002, p. 294). In addition, there was worry over the division among current certification programs, and the resulting effect on adding to consumer unawareness and uncertainty when attempting to choose sustainable ecotourism organizations (2002).

Honey (2002) commented that the critical part of ecotourism certification measures "'sustainability' which, when properly done, includes standards for assessing environmental and social impacts of hotels, resorts and travel programs" (§ 2). She noted, "Today, there are more than 100 certification programs for the tourism industry...Only seven (including Green Globe and ECOTEL) are global" (Honey, 2002, § 2). Many challenges arise when attempting to certify ecotourism because each business category and region, such as tour operators, naturalist guides, beaches and parks, needs a distinct set of rules and regulations (Honey, 2002).

One of the many goals of The International Year of Ecotourism was to help in uniting certification programs in order to ensure "...sustainable ecotourism doesn't get lost in a sea of greenwashing" (Honey, 2002, § 6). In order for the "ecotourism" label to be valuable to the environment, to local people, to tourists, and to the tourist industry, it has to guarantee that concrete standards are met, especially since ecotourism takes place in typically fragile ecosystem where the threat of destruction is very high and usually irreversible (United Nations Environment Programme, 2002). When commenting on

the launch of The International Year of Ecotourism, the United Nations Environment Programme noted, "Ecotourism is a difficult balancing act to perform...it has to balance the demands of the tourists, with care for the environment" (2002, ¶ 21).

Even so, while in some instances ecotourism has fallen to the same criticisms of conventional tourism, it does possess the capability and fosters the opportunities to reap substantial positive benefits for both the visitor in terms of raising awareness, and for the environment being visited in terms of conservation. When done properly, ecotourism can be credited with acting as a tool to help conserve biologically rich regions around the world (Honey, 2002; Horwich & Lyon, 1998; Niesenbaum & Gorka, 2004; Kerley, Geach, & Vial, 2003; United Nations Environment Programme, 2002). In many instances ecotourism can even provide economic and political justification for the preservation of some national areas (Horwich & Lyon, 1998).

Furthermore, true ecotourism has the potential to increase conservation-conscious attitudes of its travelers (Fennel & Weaver, 2005; Lee & Moscardo, 2005). Honey (1999) claimed, "...the person who practices

ecotourism will eventually acquire a consciousness that will convert him into somebody keenly interested in conservation issues" (p. 13). Researchers Niesenbaum and Gorka (2004) stated, "...ecotourism could also be an effective way to achieve conservation education. By experiencing biological diversity and new habitats, tourists also become connected to nature and develop conservationist attitudes" (p. 12).

The Partnership Between Ecotourism and Education

As demonstrated in the previous pages, one of the key elements of ecotourism that distinguishes it from conventional tourism is the educational component. The International Ecotourism Society stated that ecotourism should: "build environmental and cultural awareness and respect," and "raise sensitivity to host countries' ...environmental climate" (2006b, ¶ 2). The World Tourism Organization added that ecotourism should also guarantee a "...meaningful experience to the tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them" (World Tourism Organization, 2005e, ¶ 4). In addition, a fundamental component of successful ecotourism, according

to McLaren (1998), would focus on "...education and promote critical thinking about development, growth-oriented economics, and their unsustainable practices" (p. 110).

Because the ecotourism industry depends upon the pristine existence of the coveted destinations, the partnership between educational components that emphasize ecological and sustainable concepts become essential (Fennel & Weaver, 2005). While the partnership is crucial in maintaining a sustainable industry, it is has also been found that by stressing the educational value of activities, ecotourism companies can actually benefit and their travelers can experience both rewarding and enjoyable learning episodes within their vacation time (Kimmel, 1999). It is now widely recognized that as ecotourism continues to grow, so too should the focus and emphasis on education (Orams & Hill, 1998).

An example of a successful partnership between an ecotourism destination and the implementation of educational programs took place in Tortuguero National Park, Costa Rica where managers trained local guides to keep ecotourists from disturbing nesting sea turtles (Jacobson, 1999). By training guides, who could then

educate the visitors, the park's management goals were accomplished "...through the use of a communications program for tourists, rather than through heightened enforcement or increased physical barriers..." (p. 3). Further studies have been conducted to analyze the effectiveness of implementing educational components and interpretive programs into ecotourism destinations.

Research has shown that appropriate interpretation programs at ecotourism destinations can be effective in promoting more conservation-conscious attitudes and behaviors among the tourists (Lee & Moscardo, 2005; Stein, Denny & Pennisi, 2003; Svoronou & Holden, 2005). Defined by Freeman Tilden, a pioneer in the field of professional interpretation, "interpretation is an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information" (Tilden, in Brochu & Merriman, 2002, p. 13). The National Association for Interpretation (NAI) defined interpretation as "a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in

the resource" (in Brochu & Merriman, 2002, p. 16).

Interpretation has demonstrated that it can not only add to the tourists' environmental knowledge of the region being visited, but that it can actually encourage them to make environmentally responsible decisions in order to minimize their impacts on the area (Lee & Moscardo, 2005)

One study, however, produced results that suggested that those visitors at an ecotourism destination would already have a high level of environmental awareness, and thus, pre-visit and post-visit differences in attitudes and behavior would not be significant (Lee & Moscardo, 2005). Yet, in conclusion, the results of this particular study suggested, "Satisfying experiences provided in ecotourism accommodation may lead to reinforcing visitors' favourable environmental attitudes and thus increase their interest in further ecotourism experiences" (Lee & Moscardo, 2005). Researchers Lee and Moscardo (2005) further noted, "Through these cumulative effects, ecotourism accommodation could achieve its ultimate goal of developing more responsible attitudes and behaviours" (p. 563).

Both visitors and management at ecotourism destinations, whether at national parks or at ecolodges,

consider interpretation to be a key facet in delivering effective educational programs (Highham & Carr, 2003; Masberg & Savige, 1996). Rising as a result of increasing demands for ecotourism, an ecolodge can be defined as, "...an industry label used to identify a nature-dependent tourist lodge that meets the philosophy of ecotourism" (Ceballos-Lascurain, 2004, ¶ 6). According to Donna Norris (pseudonym) who is currently working at a successful ecolodge in the Caribbean, an effective way in which to enrich the educational component and raise awareness for visitors is to provide an interpreter (personal communication, February 28, 2006). She stated,

People on vacation don't necessarily want to attend a lecture, but we've definitely found that they love having naturalists on board when they go sailing or snorkeling, love learning about the island's natural wonders from someone who knows more about it than their guide book, and have really enjoyed the knowledge our naturalists provide in a fun way. (D. Norris, personal communication, February 28, 2006)

Norris further stated, "I believe that by giving tourists/travelers an experience they will not forget, we are helping to ensure that they recognize the awe and

wonder of nature in the place they visited" (personal communication, February 28, 2006). Norris expanded this notion by stating, "Decisions are often made based on emotion not logic. So, we believe that if you are emotionally engaged in something and emotionally attached, then you are more likely to think of that when making a decision" (personal communication, February 28, 2006). Providing educational situations that emphasize the realization of the ties that connect a person with the environment creates a sense of love, and this sense of love for the place "...is a prime motivating factor on personal transformation..." (Lane-Zucker, in Sobel, 2005, p. ii). Thus, interpretive programs at ecotourism destinations must invoke a personal connection in order for tourists to make positive environmental choices while traveling.

According to Fennel and Weaver (2005), at the very least, effective interpretation should present a fundamental understanding of the targeted natural and cultural attractions surrounding the ecotourism destination. However, on a more profound level, "effective interpretation may have a transformative effect - that is, it may induce deeper understanding of

the attraction and adherence to a more ethical and environmentalists ethos in the attitude and/or lifestyle of participants" (Fennel & Weaver, 2005, p. 377).

The educational interpretive programs at ecotourism destinations should educate the visitors not only on the particular environment that they are visiting, but also on the interconnectivity of the surrounding ecosystems and the ecological health of the area, including covering topics such as biodiversity and conservation (Fennel & Weaver, 2005; Kerley, Geach & Vial, 2003; Lee & Moscardo, 2005; Svoronou & Holden, 2005). Fennel and Weaver (2005) proclaimed that because of the typical location of an ecotourism destination in a major ecosystem, it becomes appropriate to "address many of society's most pressing issues including greenhouse gas emissions, habitat loss, agricultural encroachment, poaching, and slash-and burn-practices" (p. 382).

Another key topic for interpretive programs should address sustainable practices, and provide the motivation for guests to take responsible actions through such practices such as recycling and energy and water conservation (Lee & Moscardo, 2005). One of the ways in which to effectively address this topic is through

raising awareness of the environmental management practices used at the ecotourism destination. A study at an Australian ecolodge showed that visitor satisfaction "...was linked to awareness and involvement in the environmental management practices which further reinforces the need for ecotourism accommodation to make guests aware of opportunities for environmentally responsible behaviour" (Lee & Moscardo, 2005, p. 563).

Additionally, it is important to have interpretive programs that address appropriate guest behavior while staying in the usually fragile environment (Highham & Carr, 2003; Lee & Moscardo, 2005; Svoronou & Holden, 2005). During these programs, visitors can be informed of behavior guidelines, and most importantly, the reasons behind why it is crucial to maintain appropriate behavior while exploring the delicate ecosystems (Highham & Carr, 2003). Many times it is necessary to advise on proper actions so wildlife and other ecological systems are not negatively disturbed (Lee & Moscardo, 2005)

Partnering ecotourism with educational interpretive programs provides a fundamental piece of the solution to avoiding the potential destructive characteristics of ecotourism, and can do so in an exciting and effective

manner (Kimmel, 1999). "...Ecotourism brings many people into environments in which they can learn about the locale and learn environmental principals that can heighten their awareness of and commitment to environmental protection in general" (Kimmel, 1999, p. 44). This partnership benefits both the protection and conservation of the awe-inspiring locations, as well as the long term sustainability of the ecotourism industry which depends upon the survival of these places.

CHAPTER THREE

DESIGN OF PROJECT

This project was developed for use by educators, interpreters and naturalists working at ecotourism destinations. The interpretive programs were intended to be used as a tool in raising awareness about basic environmental and ecological issues present at ecotourism destinations situated around the world. The goal of the project was to take complicated, yet wide-ranging, environmental concepts and issues and present them in understandable ways so average tourists can be more informed throughout their travels and motivated to take environmentally positive action during their stay.

In order to fully understand the issue at hand, a literature review was written that reflected on the rise of tourism and ecotourism, as well as the essential partnership between ecotourism and education. This review, which was constructed mainly from reading books, journal articles, and internet sources, served as background information on the history and rise of current issues surrounding the topics of ecotourism. The research found in the literature review provided the foundation

and inspiration for the creation of Educational Interpretive Programs for Ecotourism Destinations (see Appendix).

In addition to concentrating on written sources of information, an interview with a current professional working at an ecotourism destination located in the Caribbean was also conducted. The interviewee's position currently entails the development of environmental education programs for hotel guests. After receiving Institutional Review Board approval on February 15, 2006, communication with the interviewee was carried out via email on February 28, 2006. Because of the substantial time difference and busy schedules, email was chosen as the preferred method for the interviewee's convenience. Four open-ended questions were sent to the interviewee regarding experience in the field of ecotourism and education. For the purpose of anonymity, the interviewee's name was changed when referenced in the literature review.

The Educational Interpretive Programs for Ecotourism Destinations (see Appendix) was created by building on the information suggested by research in the literature review. Focusing mainly on broad ecological principles

and environmental issues that are exemplified at ecotourism destinations, the topic for each interpretive program was chosen. While countless possibilities for topics exist, including highly pertinent cultural issues that revolve around ecotourism, this particular project focuses principally on the ecological concepts of environmental issues that surround ecotourism.

There are five 10 to 20 minute interpretive programs. These programs were designed with the average adult traveler in mind; however, the information in the programs is broken down into understandable terms and ideas so older children can easily grasp the concepts. The topics include: environmentally responsible behavior, the conservation of animal diversity, the conservation of native plant diversity through landscaping, on-site recycling programs, and renewable energy systems. The author wrote all of the programs, relying on personal knowledge gathered throughout undergraduate and graduate courses, as well as an environmental science textbook used for background information.

Each program reads like a script (but not meant to be read verbatim) which can be easily modified to meet the specific needs of individual ecotourism destinations.

Every program begins with a general recommendation regarding where the presentation would be appropriate for use, followed by an overview of the general goals of the program. There is an identifiable introduction, body and conclusion in each. Italicized words are not to be read out loud to the audience, but are intended to act as suggestions, concepts, thoughts, and possible examples for the educator giving the presentation.

Program one, which addresses environmentally responsible behavior, will be most effective if given as the first presentation and during the guests' initial arrival. Programs two through five, however, can be given at any time appropriate to the needs of each individual ecotourism destination. Depending on the ecotourism destination, all or only some of the programs may be suitable to use. Each program is designed to be able to be used individually or collectively.

CHAPTER FOUR

IMPLICATIONS FOR EDUCATORS

The world is currently facing a grave situation as popular ecotourism destinations are flooded with increasing numbers of travelers. Because of the rapid increase of tourism to fragile ecosystems, many of the world's most unique regions are being overrun by vacationers who inadvertently contribute to their destruction. Most often, these extraordinary surroundings are very delicate and subject to irreversible damage under the feet of careless sightseers. Tropical white-sand beaches and majestic redwood forests are only a couple of the many ecosystems at risk from the onslaught of swarms of tourists and the developments that consequently result.

Part of the solution to this critical problem lies within embracing the powerful relationship that exists between ecotourism and education. Ecotourism depends upon on a healthy environment with sparkling blue oceans and unobstructed views of landscapes. It now lies within the hands and minds of educators to raise awareness among

travelers, which is a key element in maintaining the existence of these amazing ecosystems.

Traveling provides people with unique opportunities to come into contact with extraordinary ecosystems and diverse cultures. When combined with education that fosters basic environmental awareness, traveling can connect millions of sojourners each year with their natural surroundings and inspire a conservation ethic that can be carried into their travels, as well as their everyday life back at home. By developing ecologically-conscious interpretive programs, a symbiotic relationship can occur that brings people into the awe-inspiring coral reefs, tropical rainforests, and deserts of the world, while also increasing conservation efforts and raising awareness. Research has shown that the partnership between ecotourism and education can actually be utilized as an effective conservation tool (Honey, 2002; Horwich & Lyon, 1998; Niesenbaum & Gorka, 2004; United Nations Environment Programme, 2002).

According to the definition of ecotourism, educational and enriching activities that give visitors an appreciation of the area and an understanding of the importance of the conservation that is taking place are

essential. Having appropriate educational activities and interpretation will affect visitors' actions while at the region being visited, and possibly their worldview as a whole once they get back home.

Done correctly, ecotourism can act as an effective way to platform conservation education. Furthermore, "by experiencing biological diversity and new habitats, tourists also become connected to nature and develop conservationist attitudes" (Niesenbaum & Gorka, 2004, p. 12). The created Educational Interpretive Programs for Ecotourism Destinations are intended to not only raise environmental awareness among guests, but also to create a sense of connection and belonging to the area, which can in turn, create a conservation-conscious person.

Tourism has proved to be a massive force on the planet and projections point to still increasing numbers of sojourners treading across the biologically rich regions of the world. While the fate of many beautiful landscapes have already been decided, like the suffering environment of Yellowstone National Park where traffic jams and air pollution have tainted the once regal locale, there is still hope for other ecotourism destinations that are integrating education to raise

awareness and promote sustainable practices. It is hoped that inspiring educators, naturalists, and interpreters around the world will help preserve and protect these last remaining open spaces by giving effective educational interpretive programs.

APPENDIX
EDUCATIONAL INTERPRETIVE PROGRAMS
FOR ECOTOURISM DESTINATIONS

Program #1

Environmentally Responsible Behavior

This interpretive program is appropriate for use at any type of ecotourism destination where visitors have the opportunity to interact on their own with the natural environment, including activities such as hiking on trails or snorkeling in coral reefs. It would be most effective to present this program at the onset of the guests' initial arrival so they can become aware of environmentally responsible behavior throughout the entire duration of their stay. Program time is approximately 10-15 minutes depending upon personal style, audience participation, and use of props.

Overview: Generally, this presentation is about appropriate conduct. After hearing this presentation, I want my audience to understand that maintaining appropriate and environmentally responsible behavior while visiting the area is vital in preserving the ecological health of the surrounding ecosystem.

Introduction:

At one time or another most of us have seen a beautiful landscape that has been tarnished with the sight of litter, or stained with some type of pollution. Has this ever happened in your home town? Think about a local beach or a local park, or any natural area in your hometown where the once attractive and healthy area was then polluted by careless bypassers who left the area ruined. *(Let audience respond if appropriate to get them actively involved in discussion.)*

Now think about these startling images. Trash is being carelessly dumped on your very own front lawn. Or maybe imagine that pollution gets into your drinking water so that it becomes contaminated and you and your family get sick. Or perhaps envision that you discover your entire home is just destroyed one day when you come back from the grocery store. How would these actions make you feel? Do you think you would be able to survive after

such devastating events? *(Use appropriate props to have visuals for the audience. For example, have some trash to hold up and a dirty water container.)*

These scenarios are, unfortunately, some common occurrences that this surrounding ecosystem and its wildlife currently face. However, by practicing environmentally responsible behavior, visitors like you can make sure that you have only minimal impact on the surrounding beautiful area that you are here to see.

For the next few minutes I would like to talk a little bit about what an ecosystem is. We will then spend some time discussing the types of environmentally responsible behaviors you can take while visiting this ecosystem, and we will discover the reasons behind why it is so important to practice these types of actions. To finish our meeting together, we will touch on the concept of interconnectivity in ecosystems, which is what makes environmentally responsible actions so crucial in protecting this very delicate area.

Body:

- ***Ecosystems***

To begin our talk, an ecosystem can be described as a community of living organisms such as birds or worms, and its surrounding nonliving environment, such as trees and rivers. Did you know that an ecosystem can be as small as a puddle, or the size of a large forest, or even as big as the entire Earth? *(Show pictures of a puddle, a forest, and the Earth.)*

You can even think of your own hometown as an ecosystem, including all of the people, animals, and plants that inhabit the area, as well as the surrounding buildings, homes, and other nonliving components such as the water and air. All of these elements functioning together make up an ecosystem.

If you look around you right now, you can see many elements of this surrounding ecosystem. The (sequoia trees) , (owls) , (bees) and

(wildflowers) are just a few examples of living components, while the (rocks) , (streams) , and (clouds) are all examples of non-living components. *(Fill in the blanks with suitable elements for the region that this presentation is being given. Have real examples of components for audience to see and touch if possible.)*

We all depend on the services of healthy ecosystems around the world. For instance, do you know where your morning cup of coffee comes from? The answer is from ecosystems of tropical regions where coffee beans are harvested. Did you ever think about the air you breathe every day? The air you breathe is possible only because of the plants in ecosystems around the world that take in our carbon dioxide that we exhale, and then release the oxygen that we need in order to survive. Ecosystems provide us with services as small as coffee beans, to as significant as supplying us with the essential elements such as water and air. Without healthy ecosystems we would not be able to live on Earth.

- ***Environmentally responsible behavior***

So, now that we know what an ecosystem is, and what some of the elements of this surrounding ecosystem are, we can talk about some easy steps to take in order to practice environmentally responsible behavior while visiting this area. The most important and overarching theme to keep in mind is to always try to minimize your impact on the area by simply leaving the places you visit the way you found them. In some cases, you may even want to leave them in better condition than the way you originally discovered them.

One of the first ways you can achieve this is by not leaving any evidence behind that you were ever there (besides footprints, of course). So, make sure to pack up any trash, or food, or any other human-made objects that you brought with you. *(Have a trash bag in which to put trash in order to demonstrate responsible behavior.)* Also, preserve the original

beauty of the area by not vandalizing the natural assets of the environment through harmful practices such as scratching your name into a tree's bark.

The next environmentally responsible action to take in preserving the health of the ecosystem is to not take anything away from the environment, including animals, plants, shells, and rocks. Each animal, and even each rock, has its role to play in the healthy functioning of this ecosystem and taking them away can have harmful effects by upsetting the balance. Instead, take pictures of the beautiful settings to keep with you forever.

Next, take precautions not to disturb the wildlife. Would you like it if you were startled or scared by strange creatures while you were simply trying to live your life in your home? I am pretty sure that your answer would be no, and in reality, the animals do not like it either. It is actually possible to risk harm to a species' survival if it is continuously bothered. *(Show pictures of wildlife present in region).*

And finally, when out exploring the area *(whether it be hiking in the mountains or snorkeling in the coral reefs, etc.)*, it is imperative to stay within designated areas. They are marked for your safety and the safety of the wildlife and the overall health of the ecosystem. *(Show signs that designate appropriate areas so that audience is fully aware of what to look for, such as trail signs.)*

- ***Reasons why visitors must practice responsible actions***

Now you are aware of how to take the steps to environmentally responsible action throughout your stay. Not following these environmentally responsible steps can lead to irreversible damage inflicted on the fragile ecosystem and all of its essential parts.

Many times visitors feel that they are "only one person" who will not make a difference. However,

think of this example: imagine a plastic bag is left behind after a picnicker's lunch on the beach. The wind then blows the plastic bag into the ocean and an unsuspecting sea turtle eats the bag thinking it is a jellyfish. The sea turtle then suffocates and dies. Just think, if that one person had picked up that one little piece of trash, then the life of an amazing animal which serves an important role in the entire ecosystem would not have been cut short. *(Use an example that will be pertinent to the location in which this presentation is being given. For this example, have pictures of sea turtles.)* Practicing these responsible actions will help prevent destructive effects on the nearby environment.

- **Interconnectivity**

Following these environmentally responsible guidelines are important because of the underlying idea of interconnectivity: the fact that everything in ecosystems is connected. Affecting one aspect of the natural system will inescapably have effects on other parts of the system.

For instance, if a person in an off-road vehicle drives into undesignated areas, it can leak chemicals into a crucial water source, such as a stream. Because of this person's careless actions, the water source of the ecosystem can be affected. Species which develop in water, such as frogs, might not be able to successfully reproduce and survive because of the pollution. Then the decline of frogs would lead to a decrease in species such as birds which depend on frogs as a food source. This chain effect can continue indefinitely, causing impacts on all levels of the ecosystem. *(Have picture of arrows indicating never-ending cycle).*

Conclusion:

To conclude our talk today, it is clear that we can take steps toward environmentally responsible action that preserves the beauty and health of this surrounding

ecosystem. The steps are generally common sense if you simply think about how you would want your own local hometown and your home to be treated. Put yourself in the place of a (example of wildlife in area) and you can see how important it is to keep this ecosystem healthy, just like you would want your hometown ecosystem to be kept clean and healthy. All elements of an ecosystem are interconnected and not only does the wildlife depend upon these connections, but you and I do as well.

When out exploring all of the amazing sites this area has to offer, do your part in making sure to not harm the ecosystem, minimize your impact, and protect it for future visitors. This way your children and grandchildren will be able to come back and visit this very same spot with all of its awe and wonder. You have the ability as a traveler to this region to take environmentally responsible actions to keep this environment healthy. *(End on a positive note with beautiful pictures of the region.)*

Program #2

Conserving Animal Biodiversity

This interpretive program is designed for use at an ecotourism destination that is known to be particularly biologically rich and diverse, and that is also increasingly subject to harmful pressures such as poaching, habitat loss, and illegal trading. Places located in the tropical latitudes generally exemplify this concept of high species biodiversity, as well as the high risk of exposure to these destructive practices. However, visitors at any ecotourism destination would benefit from hearing this presentation by raising general awareness on the topics of conservation and the value of biodiversity which can be viewed as both regional and global issues. Program time is approximately 10-20 minutes depending upon personal style, audience participation, and use of props.

Overview: Generally, this presentation is about biodiversity. After hearing it, I want my audience to understand that it is crucial to make decisions while traveling in the area which protect against harmful practices like poaching, habitat loss, and the illegal trade of species in order to conserve species diversity, which is an essential component of a healthy ecosystem.

Introduction:

Have you ever imagined what types of animals used to live in your backyard before all of the land was cleared and the walls were constructed? Do you know what lives in your backyard now? *(Let audience respond.)*

It is startling to realize that before modern humans began settling into civilizations, the continents were far richer in biodiversity than what you would find today. Maybe at one time your very own backyard had tigers, or grizzly bears, or pandas, or maybe streams rich with salmon. Now, however, human pressures have contributed to the decline, and sometimes even the extinction, of species all around the world.

Today you are lucky to be able to visit this region which is considered to have some of the highest levels of biodiversity in the world. In the next few minutes I would like to talk to you about biodiversity and the many important functions it fulfills in our present day. I would also like to bring to your attention some of the harmful pressures that are currently placed on the biodiversity here and around the world as a result of human actions. My hopes are that you will not be exposed to these pressures during your stay, but in case you do, I will finish by filling you in on some easy ways in which you as a traveler can help promote the conservation of species diversity.

Body:

• **Biodiversity**

To begin our conversation, the loose definition of biodiversity can be described as the variety of life on earth, or in a particular area. At one time or another most of us have witnessed differing levels of animal diversity whether you realized it or not. For instance, who has seen abandoned parking lots where maybe only a few birds, insects and small mammals, such as rats, existed? On the other end of the spectrum, there are places such as this environment with complex ecosystems that support a high level of diversity in species with hundreds of different types of _____, _____, _____, and _____ (birds, reptiles, mammals, insects, fish, coral, etc. Fill in with the appropriate types of animal species for the region in which this presentation is being given).

In general, higher levels of biodiversity occur at lower latitudes, or places that are closer to the equator. So, as you have probably realized, we are in an area of high diversity because of our location. If you lived in northern Canada or Siberia for instance however, you would experience lower levels of diversity as opposed to tropical areas such as Brazil, or Central Africa, or tropical islands surrounded by coral reefs. (Have a world map to visually illustrate locations.)

Does anyone know how many species there actually are on the planet? Well, if you do not know the answer, do not feel bad because even scientists do not truly know the exact number, simply because more and more species are being discovered all of the time. Rough estimates, however, range between 15 and 100 million species throughout the world.

While scientists scramble to answer this question, humans are making it even harder by placing pressures that lead to the decline and disappearance of species before they are even discovered. You might ask yourself, "Why would I care about a little frog, or fish, or beetle that never gets discovered because it goes extinct?" The truth is that biodiversity plays a crucial role in the existence of our everyday lives and that little frog, fish, and beetle all play their part in keeping the earth a healthy and functioning ecosystem upon which we depend.

- ***Importance of biodiversity***

One of the reasons used for conserving biodiversity is based on a utilitarian justification, or the idea that different species are useful as resources for humans. One of the leading ways in which this is validated is through chemical and medical uses. Has anyone or anyone in your family had experiences with cancer? Well, did you know that there is research which suggests that some animals, such as sharks, might contain some answers in how to combat cancer in people? The point is that by recognizing the potential promises, most of us would want to keep all of these species around that might contain the answers to help us cure cancers and other diseases.

Another reason to conserve biodiversity is because every species on the planet has a unique role to play in their local, as well as global ecosystem. Imagine each species as a cog in a machine; the machine represents their ecosystem. When a cog, or species is removed then the machine, or ecosystem cannot function correctly. You and I depend upon the

existence of healthy ecosystems which provide ecological services that are necessary to our survival, such as the purification of water and air. Decreasing biodiversity decreases our, and our children's, likelihood for a future on this planet. When too many species are removed, then total ecosystems can collapse, leading to our demise as well.

In addition, some people argue for aesthetic justification in conserving biodiversity, meaning that biodiversity adds to the quality of life by providing some of the most visually beautiful aspects of our lives. Think about this for a moment - why did you travel to this area of the world? Your answers most likely revolve around the opportunity to be able to see the diverse amount of beautiful and amazing species. *(Show pictures of amazing species present in the region, such as chameleons, tropical fish, colorful birds, zebras, etc.)*

- ***Harmful practices to biodiversity***

So, now we know what biodiversity is, and many of the reasons behind why it is crucial to conserve biodiversity. But did you know that we are currently in a mass extinction? That's right - just like the extinction of the dinosaurs. We are currently losing biodiversity around the world at a pace faster than at any time since the evolution of humans. *(Use picture of dinosaurs to exemplify point.)*

Since early times when humans lived in caves and hunted mammoths, we have greatly changed the biodiversity of the world. We have decreased the number of species, and increased the rate of extinction in many ways.

Many harmful practices exist in this region, as well as around the world, such as poaching, and the illegal trading of species for exotic pets. These human actions cause a direct decline in biodiversity and an increase in extinction of species through intentional hunting and harvesting. Has anyone ever

seen how elephants are killed for their ivory? Or maybe leopards killed for their fur? The startling images are, unfortunately, a reality in many places around the world. (*Show pictures of LIVE elephants and leopards.*)

Another one of the leading ways in which humans have decreased biodiversity is through the destruction of habitats. This indirect threat can take place when habitats are completely destroyed, such as clear-cutting a forest, or when habitats are so polluted from human causes that species can no longer exist there. Imagine if your home, your food, and any other resources you depended upon were suddenly taken away from you and your family. It would definitely be difficult to survive.

And finally, another harmful practice to biodiversity in this environment is the introduction of exotic species, or species that do not naturally exist in the region. These species can sometimes outcompete the species that are already there, and in some instances upset the entire balance of the ecosystem. (*Give example relevant to region if appropriate.*)

- ***What you can do to help***

All of these pressures contribute to the decline of the species diversity in this area and around the world. However, there are ways in which you can help prevent the loss of even more species during your travels here, as well as when you get back to your hometown.

The first action you can take is to make sure not to buy any animal product that comes from an endangered species, or is under protective laws, or harvested from illegal practices. For instance, do not purchase any jewelry that has ivory (or coral, or turtle shell, or any other product that would be appropriate for the region from which this presentation is being given. Fill in with the suitable products). Also, watch out for products

such as rugs or purses that are made out of the skin or fur of endangered animals (*such as leopard pelts, crocodile skin, etc. Once again, choose appropriate examples for region being discussed*). While the necklace, or purse, or blanket may be beautiful, the product was gathered at the expense of the animal's life and purchasing these types of products only sustain the destructive business and lead to the decline of the species' population.

furthermore, while traveling in the area make sure to practice environmentally responsible behavior in order to protect the safety of the animals, as well as their fragile habitat. In other words, minimize your impact on the area by not littering or leaving anything behind that could pollute the habitat. Do not disturb the wildlife. Leave the areas you explore in the state you found them. It is essential to recognize that if we are to conserve a species in its natural habitat, we must make sure that all the requirements of its habitat are present. Look for environmentally responsible activities and organizations to associate with traveling that also practice environmentally responsible behavior.

Also, when you return to your hometown, do not purchase animals from pet stores that are illegally caught, and do not support those pet stores in general. If you are interested in exotic species you can usually find sellers that do captive breeding who do not take species out of their natural ecosystem. And finally, support causes that conserve precious habitat for these species.

Conclusion:

To finish our talk, we have discovered how biodiversity supports our own existence, by giving us food, medicines and other products we need on a daily basis, as well as by supporting ecological services that we also depend upon. After learning about some of the destructive pressures that exist in this area, you as a traveler can now make environmentally responsible choices and help prevent the loss of more species. It should be clear now that a mutual relationship has developed where

not only do we need the existence of the planet's many species in order to survive, but now they need us to help them as well.

To end this presentation, think about what species you most want to see on this trip. Maybe it is an elephant, or a crocodile, or a flamingo (*use appropriate examples for the particular region from which this presentation is being given*). And now, think about what you can do to help guarantee its wild future here.

Program #3

Sustainable Landscaping with Native Plants

This program is suitable for use at an ecotourism destination that makes it a priority to landscape with native plants. The program was designed to be given in warm and dry desert or Mediterranean climates where large inputs of water, fertilizers, and pesticides would typically have to be used in order to support a non-native, energy-intensive landscape. This presentation provides an opportunity to raise awareness among the guests on how to get involved in this sustainable practice undertaken at the ecolodge. Program time is approximately 15-20 minutes depending upon personal style, audience participation, and use of props.

Overview: Generally, my presentation is about landscaping with native plants. After hearing this presentation, I want my audience to understand that sustainable landscaping through using native plants is a crucial way in which to preserve the biodiversity of surrounding native plant life, conserve water, and reduce harmful inputs such as fertilizers and pesticides.

Introduction:

What do you think would happen if a polar bear was put in a hot desert environment, or maybe a desert tortoise put in a tropical rainforest? (Show pictures of examples with the animals in their respected home environments.) The answer is that they probably would not survive because they are not adapted to the extremely different surroundings.

Seems like a crazy idea to put a polar bear in a desert setting, right? While this seems like an illogical proposal, people have actually been attempting this scenario with plants for many years by taking them out of their native environment and planting them in very different and incompatible climates.

Now everyone close your eyes for a moment and feel the warm, dry air on your skin that is typical of this

region. Imagine bringing water-loving plants such as those that are native to the rainy tropics and planting them in this dry soil where we get very low levels of rainfall. Would you expect those plants to survive?

Seems unlikely, but humans have actually managed to manipulate the environment by bringing in water from thousands of miles away and producing chemical pesticides to protect the fragile plants in their new harsh environment. If you are from a hot and dry region, think about all of tropical ferns and big green lawns that are probably present in front of every house and every building in the city. While, this might look attractive, people are beginning to understand that maintaining these types of exotic gardens are actually quite destructive to the local environment.

When landscaping, why not use plants that are native to the region in the first place? If you look around you right now, we are landscaping by using only native plants. For the next few minutes, I would like to tell you about why it is so important to conserve native plant biodiversity, and what some of the threats are that these native plants are faced with. We will also take a look at some of the wonderful benefits of landscaping with native plants. To conclude, I will let you in on some really cool ways in which you can get involved in the environmentally friendly landscaping here at the ecolodge. *(Provide pictures of surrounding landscape and/or simply point to surrounding examples.)*

Body:

- ***Importance of conserving plant biodiversity***

Plant biodiversity, which is just a fancy way of talking about all of the many different varieties of plants, is crucial to conserve because it provides the planet with many astounding services. Did you know that we depend upon wild strains of plants to introduce new genetic material into crops so that they remain resistant to pests and disease? Without the diversity of new genetic strains, grain and crops that we depend upon for food on a daily basis

can become vulnerable to pests and disease, and eventually become unproductive. *(Have real examples of corn, grain, etc. for audience to see and touch).*

Another way in which plant biodiversity is important is because of medical uses. Who has ever taken aspirin for a headache, or antibiotics for a cold, or used aloe on a sunburn? All of these treatments, along with many others such as anticancer drugs, steroids, and medicines for heart ailments, are all derived from plant extracts from around the world. *(Show bottle of aspirin, aloe, etc.)*

Also, conserving plant diversity helps maintain the healthy functioning of ecosystems, which provide irreplaceable services to us such as the purification of air, water and soil, the stabilization of climate, and the prevention of erosion and soil loss. An essential example of one of these services is the removal of carbon dioxide by plants. Without this service, you and I would not be able to breathe the air. Because each individual plant species has different capabilities for purifying pollutants and stabilizing the environment, a wide diversity of species can provide the best range for a healthy Earth in which we can live.

Some of the plants here that make up the native biodiversity include: _____, _____, _____, _____, and _____. *(List appropriate examples for the region from which this presentation is being given. Have real examples of the species, if possible, for the audience to see up close.)* All of these species play an integral part in the surrounding ecosystem, whether they purify the soil, provide food for animals or people, or act as a healing medicine.

- **Threats to native plants**

While conserving the biodiversity of plants is recognized, many threats exist to native species.

One of the largest threats is the introduction of exotic, or alien plants, which are species that do not naturally exist in the region. The presence of exotics can have enormous negative impacts on plants native to the area.

Sometimes when an exotic plant is introduced, whether it be accidental (such as when seeds get tracked around on the clothes of people), or intentional (such as when people choose to landscape with exotic species), it can outcompete the native species. Has anyone ever noticed a plant's seeds stuck to your jeans or maybe your pet?

Many times an exotic plant will lack the natural predators, enemies, and competition that it had in its original environment. It might also be able to outgrow the native species and it could produce enormous quantities of seed. These characteristics make it easy for an exotic to take over the entire landscape and wipe out the natives.

Similarly, introducing exotic animal species can have negative impacts on native plants. Many times, an exotic animal will voraciously eat or trample the local vegetation, and because the native plants are not accustomed to compete with animal, they will not be able to survive. *(Give example if appropriate, such as "in this area pigs were introduced onto the island which have wiped out this grass species," etc.)*

Another threat to the diversity of native plants is simply the loss of land for them to grow upon. In many areas where land is cleared for housing and other construction projects, species of plants that perhaps only grew in that one area are lost forever. Land cleared for agricultural development is another threat, especially in tropical areas where many plant species have not even been discovered yet. *(Show picture of clear cut rainforest land.)*

- ***Benefits of using native plants in landscaping***

While these many threats to plant biodiversity exist, there is also a simple way in which to help conserve native diversity, as well as prevent other environmental problems at the same time. This simple action that we have undertaken here at the ecolodge is landscaping with plants native to the region.

Purely by using native plant species, we are helping to maintain the plant biodiversity of this area by keeping out potential harmful exotic species. In addition to this environmentally responsible action, by landscaping with native plants whose natural requirements are suitable to the local climate, we are reducing the need for many inputs, such as large amounts of water. For instance, planting a tropical plant in desert climates would require large amounts of water in order to meet its natural requirements. However, by using native plants such as succulents that are adapted to the dry desert climate, we are saving huge amounts of precious water. *(Have real examples for audience to see and touch.)*

Furthermore, by using native plants whose natural requirements are suitable to the local environment, there is a lessened need for pesticides and fertilizers. Native plants are resistant to native pests and are adapted to the quality of this soil. By getting rid of harmful chemical pesticides and fertilizers we are preventing the possibility of contaminating your drinking water with known cancer-causing agents, as those chemicals easily runoff into water sources.

Finally, by maintaining native plants, we have provided a habitat for many beautiful native animal species, such as birds and butterflies. When you walk around the grounds you will be able to experience thriving habitats with amazing plants and flowers and the animals that call it home. *(Show pictures of landscaping with wildlife.)*

Last but not least, we have saved money here by lowering our water bills and not buying chemical pesticides and fertilizers. We have also saved time and energy by not having extensive grass lawns to mow, and by letting the landscape grow in its natural state.

- ***How you can help in our sustainable landscaping***

As you can see, landscaping with native plants has many positive effects, both for the local environment, and as a result, for us. If you want to get up close and personal with what goes on with our landscaping you can participate in _____. *(List the possibilities that are available to the guests, such as participating in the actual planting of native species on the grounds, weeding exotic species, etc.)*

Conclusion:

To sum up this presentation, conserving plant biodiversity is a crucial issue if we want to continue to thrive on this planet. Plant biodiversity provides us with many unique products and services. While many threats face the existence of native plants here and around the world, steps can be taken to help conserve the many species. Landscaping with native plants is a simple way in which to maintain native diversity while also providing many other significant benefits to us and the environment.

You can take these examples here during your stay and implement them back at your home. Besides producing a picturesque backyard, you will have a native yard that provides a healthy habitat for local animals, and because the plants are in sync with the local area, your garden will always look great. Plus, who would not want to save some money and time by having a self-sustaining, native yard?

Program #4

Recycling Program

This interpretive program is appropriate for use at any ecotourism destination that integrates an on-site recycling program into its facility and wants, not only to make its guests aware of its sustainable practices, but also to encourage them to actively participate. The recycling program could consist of one or many aspects including aluminum cans, plastic bottles, glass, paper, organic waste, and any other product that is appropriate for each particular destination. Program time is approximately 10-15 minutes depending upon personal style, audience participation, and use of props.

Overview: Generally, this presentation is about recycling. After hearing the presentation, I want my audience to understand that participating in the on-site recycling program is an important action to take in minimizing impact on the area being visited, as well as in conserving the Earth's limited resources and landfill space on a global scale.

Introduction:

Who drank out of a soda can in the last week? Or maybe a glass bottle? *(Have real soda can and glass bottle to demonstrate point.)* I am sure most of us have, but did you every stop to think about where that can or bottle came from? Most importantly, what did you do with the can or bottle when you were done - did you throw it in the trash, or did you recycle it? It is interesting that many of the products we use on a daily basis come from finite amounts of mineral resources formed from geologic processes over millions of years.

Does anyone read the newspaper? Newspapers are derived from the biological, or renewable resource of trees. *(Have real newspaper for people to identify.)* When you are done reading the paper, do you throw it in the trash? Or maybe reuse it as wrapping paper?

Over the next few minutes I would like to talk about the importance of understanding what nonrenewable and

renewable resources are and why it is critical to take steps to keep these everyday products out of landfills that are quickly filling in cities around the world. To conclude, we will consider recycling as part of the solution and I will fill you in on how you can participate in the onsite recycling program during your stay here.

Body:

- **Nonrenewable resources**

Limited, or nonrenewable resources are resources that have a finite, or limited amount that can be used. In other words, once we use up all of the resource, then there will be no more that we can mine, drill or extract. Mineral resources, including everyday products such as aluminum, iron and glass, can be considered nonrenewable resources that were formed by geologic processes of the past. Even though new deposits of the resources are actually forming from current earth processes, they are formed too slowly to be of use to us on a human timescale, and are thus, considered to have a finite supply.

Did you know that you are surrounded by mineral products in your home? Some examples of mineral products that can be found in a typical home include: building materials such as sand, gravel, aluminum and asphalt; plumbing materials such as iron, steel, and tiles; paint and wallpaper which comes from mineral pigments such as iron and zinc; appliances from copper and rare metals; and everyday objects such as windows, light bulbs, silverware, and jewelry. *(Have real examples when possible, and show pictures to supplement.* Once we extract all of the aluminum from the Earth to help make our homes and to sip our soda from, then there will never be anymore.

- **Renewable resources**

While we have many mineral resources which are nonrenewable and have a finite supply, we also depend heavily upon renewable, or biological resources that can have an infinite, or unlimited supply. A renewable resource is naturally recycled or recycled by artificial processes within a time framework useful for people. Examples include timber, water and air.

The key to maintaining renewable resources is to use them in a sustainable manner, or in other words, not to consume the supply faster than it can be replenished. For instance, trees are a renewable resource that can be used for timber to make houses or to make paper products, like the newspaper you probably read on a daily basis. If trees are harvested at a sustainable rate so they are able to renew themselves, then it can be an unlimited supply. If however, practices such as clear-cutting persist where entire forests are simply leveled, then this biological resources will not be able renew itself. *(Show pictures of clear-cutting versus sustainable harvesting.)*

- **Landfill space problem**

So far we have learned about renewable and nonrenewable resources that we depend upon for everyday products and services. What happens to these resources and products once people are done with them? Usually they are thrown into a trash can and then it is picked up. But where does it go after that? Not many people think about where the products they use on an everyday basis go after they throw it into their trash, yet it is a very big issue as the life of the product is far from over. *(Show picture of trash can.)*

Did you know that one of the most common ways in which waste is handled is by dumping it into landfills? The problem with this solution is that as the human population continues to grow, so does the

amount of waste. The dilemma is that we are producing too much waste and there is too little space acceptable for permanent disposal. Many cities are already running out of landfill space either because existing sites are filled or because it is difficult to find new sites. *(Show pictures of landfills.)*

One of the most common predicaments associated with waste management and landfills is the idea of NIMBY, which stands for "Not In My Back Yard," referring to how nobody wants an environmental hazard such as a landfill near their home. Would you approve a proposal to build a landfill next to your family's house where toxics could leak into the groundwater, where the noise of trash trucks would be a constant annoyance, and the smell of rotting waste would be overwhelming? The answer is probably no, but we need to put our waste somewhere, right?

- ***Recycling as part of the solution***

Part of the solution to this problem lies within recycling. The concept of recycling, which is based on the idea of reusing products, can be found ingrained in natural systems; in nature, there is no waste - only resources. For instance, all resources are used by plants and animals in a never-ending cycle.

With our on-site recycling program we are aiming to reuse as many resources as possible to minimize impact on the surrounding area, as well as globally, by not adding to diminishing landfill space and the consumption of both renewable and non-renewable resources. We are constantly looking for new ways in which to recycle products. *(Show recycle signs.)*

You will find bins around the grounds that take _____, _____, _____, and _____. *(Fill in the blanks with the appropriate recyclable materials for the site from which this presentation is being given: aluminum cans, glass bottles, plastic bottles, paper, etc.)* By recycling the products you

use here, you are helping to prevent waste, and producing resources that can be used again.

(If appropriate, tell guests about unique recycled products at the ecotourism destination.) Many of the products you will find here are made out of recycled products. For example _____ *(All of the tile on the bathrooms are made from recycled glass; the patio decks are made out of recycled plastic, etc.)*

(If the ecolodge integrates the practice of composting...) Another way in which we recycle is by turning our organic waste into rich fertilizer through composting. Composting turns our food scraps and yard waste into a new resource by decomposing. As you will see, in our eating areas we provide ways to put your food scraps to use in our composting bin. This way, not only are we keeping yard and food waste out of landfills, but we are also producing our own natural fertilizers to put on our plants so we do not have to bring in harmful chemicals.

Conclusion:

As we have just realized, we face a huge challenge as our population continues to grow and the amount of waste produced has to be dealt with. As nonrenewable resources diminish and nonrenewable resources are used faster than they can be replenished, and landfills start to overflow, recycling can be seen as part of the solution. While the biggest step toward easing this problem lies with reducing our consumption of resources in the first place, recycling provides a viable answer to the products we are already have.

You can make a difference here during your travels, as well as when you go back to your home by taking these principles with you. Recycling is an easy step to take; how hard is it to simply put your can into a recycling bin as opposed to a trash can?

Program #5

Renewable Energy

This interpretive program was designed for use at an ecotourism destination that incorporates renewable energy technology, revolving around passive and active solar systems, into its facilities. Generally speaking, this topic would limit its presentation to ecotourism destinations located in regions that receive enough annual sunlight to make solar energy a feasible energy alternative. However, any destination that incorporates other forms of renewable energy, such as wind and hydro, could easily modify the emphasis of the program to meet its needs. Program time is approximately 15-20 minutes depending upon personal style, audience participation, and use of props.

Overview: Generally, this presentation is about energy sources. After hearing the presentation, I want my audience to understand that integrating renewable energy sources, such as active and passive solar systems, into the facilities is an essential way in which to decrease dependence on nonrenewable and environmentally harmful fossil fuels as an energy source.

Introduction:

Who here has recently had to pay outrageous prices at the gas pump? Or who has huge electric bills to pay at the end of each month trying to keep their house either cool or warm enough? The chances are that most people would answer yes to these types of questions because of the way we are currently dependent on fossil fuels as our dominant source for energy.

Most of us experience the need for electricity countless times a day. Think about the energy needed for the coffee maker in the morning, the hot water for your shower, the television to watch the morning news, and every light you switch on. The reality is that we usually do not think about that energy, where it comes from, and what effects it has on the environment, because all we do is flip on a switch and then pay the bill at the end of the month.

However, our lifestyle, which is dependent on fossil fuels for energy is going to change as the world is facing peak levels of its supply. One of the ways in which we can easily transition from fossil fuels is by integrating the use of renewable energy sources, such as the sun. Did you know that civilizations as early as the Greeks and Romans utilized solar energy to warm their homes as their local wood supplies were depleted? (*Show pictures of Greek or Roman civilizations to connect to past.*) As fossil fuels become depleted, we too, can learn how to harness the sun's tremendous energy.

In this presentation I would like to talk about what fossil fuels are and what some of the harmful environmental impacts are that result from their use. After, we will talk about the alternative renewable energy sources that provide clean and sustainable energy. And finally, I will let you in on the fascinating ways in which we have integrated direct solar energy systems into the facilities here that you are visiting.

Body:

- ***Fossil fuels***

Fossil fuels include oil (also known as petroleum), natural gas, and coal. The word fossil is used to describe these energy sources because they were produced from plant and animal material that were buried deep in geologic processes millions of years ago. Like dinosaur fossils from the past, this organic matter was buried and under extreme geologic and chemical pressures, the fossil fuels that we use today were created. (*Have prehistoric pictures to exemplify the connection to the past.*)

Did you know that while fossil fuel resources took millions of years to form, we humans may use the entire resource within just a few hundred years? Fossil fuels are a nonrenewable source of energy based on a human timescale. Yet, we are quickly gobbling them up to run our air conditioners, heaters, cars, airplanes, and every electronic

appliance that you own. (*Show either real examples of the mentioned products that depend upon fossil fuels, or display pictures.*) In other words, there is a finite supply of fossil fuels and we are quickly running out.

That thought can be frightening when it is realized that approximately 90% of the energy consumed on a worldwide basis is produced by fossil fuels. But what is also frightening, and often overlooked, are the harmful environmental impacts that result from the use of fossil fuels.

- ***Environmental impacts of using fossil fuels***

With the development of oil and natural gas fields in particular, there is a huge negative impact on the land that is developed for the construction of wells, pipelines, and then the resulting roads that are needed. There is also pollution of surface waters and groundwater that results from runoff or leaking from broken pipes. With all these impacts comes either the loss or the disturbance of fragile ecosystems. (*Show pictures of current oil and gas fields so audience can visualize.*)

Has anyone heard about the current proposal to drill in the Arctic National Wildlife Refuge in Alaska, or in icy plains of Antarctica? Drilling in these ecosystems could cause irreversible damage to land and wildlife especially when you consider the threat of possible oil spills. Can you imagine trying to swim around in the ocean with thick oil saturating your skin? Unfortunately, this scenario has already happened with examples such as the infamous Exxon Valdez spill in 1989 in the waters of Alaska where the ecosystem and its wildlife suffered. (*Show pictures of oil spill.*)

While those are some problems associated with natural gas and oil, the use of coal has its own environmental impacts as well, such as the harmful practice of strip mining. The process of strip mining, which is the typical method used, is

especially harmful because the entire overlying surface layer of soil and rock is stripped off the land to reach the coal. This practice leaves barren and ruined landscapes that can sometimes be so disturbed, that vegetation cannot even reestablish. In addition, in areas that get lots of rainfall, the creation of acid water from mine sites is a serious problem which can lead to the pollution of streams and groundwater. Would you want your family to drink from water downstream from a coal mine? *(Show pictures of coal strip mines that exemplify the environmental impacts.)*

Besides producing harmful impacts during development and extraction, fossil fuels also have tremendous impacts when they are used. When fossil fuels are burned to provide us with the energy we need to run our daily lives, huge amounts of air pollutants such as sulfur dioxide, nitrogen oxides, carbon dioxides, and ash are produced. All of these fancy chemical names simply add up to impacts including air pollution, acid rain, water pollution and global warming. Most of us have probably seen these types of impacts whether you knew it or not. For instance, it would be my guess that all of us have at one time or another been exposed to smog - you know, that ugly brown haze that usually sits above a crowded city. That type of air pollution is the result of burning oil in our cars. *(Use pictures to demonstrate the visual impacts of pollution, such as smog overlying a city.)*

So while we have heard and seen some of the devastating environmental impacts of using fossil fuels, most of us would probably admit that it would still be very difficult to simply abandon every aspect of our life that depends on these energy sources. How could we light our homes, or have hot water, or use our computers? Part of the solution to this problem lies within integrating renewable energy.

- **Renewable energy sources**

Renewable energy sources include solar energy, hydro or water power, wind power, and energy derived from burning biomass, such as wood. Who has seen the tall white fans that dot the landscapes of windy regions? Or huge dams on rivers where the water rushes past? Both of these are examples of electricity being produced by renewable energy that you might have seen. *(Have visuals of each type of renewable energy for the audience to see.)*

Sometimes this entire group of energy sources is loosely defined as solar energy because they are all products of the sun's energy. They are considered renewable energy sources because they are regenerated and renewed by the sun within a time useful to humans.

The benefits of using renewable or solar energy are that they are inexhaustible for as long as the Earth and sun coexist, and are generally associated with minimal environmental impacts. With the exception of burning biomass, renewable energy sources do not increase pollutants such as carbon dioxide, and thus do not add to the problem of global warming and air pollution in general. The one major disadvantage, however, is that many forms of renewable energy are sporadic and cannot exist in all parts of the world because they depend on regular sunshine.

- **Direct solar energy**

It is amazing to think about the total amount of solar energy that reaches Earth's surface. For example, on a global scale, 10 weeks of solar energy is roughly equal to the energy stored in all known reserves of coal, oil, and natural gas on Earth. *(Show picture of sun.)* So, capitalizing on the abundant sunny weather we get here, we have incorporated the renewable energy of direct solar into our facilities to offset the use of electricity

produced by fossil fuels, and minimize our total impact on the surrounding environment.

Here at our facilities we have integrated both passive and active direct solar systems. The passive solar energy system refers to the architectural design of the surrounding buildings that enhances the absorption of solar energy and takes advantage of the natural changes that occur throughout the year without requiring any mechanical power. If you look around, you will see one simple technique that we have used, which is to design overhangs on the buildings that block the high summer sunlight, but allow winter sunlight, which comes in at a lower angle, to penetrate and warm rooms. (*Point out the surrounding buildings and the overhangs.*) This method is in sync with how the natural world functions. Using passive solar energy was the method incorporated by the Greeks and the Romans as mentioned earlier.

We also have some active solar energy systems on-site. The term active refers to the fact that these systems require mechanical power, usually in the form of pumps and other devices to circulate the air, water or other fluids from solar collectors to a heat sink, where the heat is stored until used. As you can see, we have solar collectors, which are flat panels made of a glass cover plate over a black background where water is circulated through tubes. Acting like a greenhouse, radiation from the sun enters the glass and is absorbed by the black background. Then, radiation is emitted from the black material, but it cannot escape through the glass, thus it heats the water in the circulating tubes. These devices are used to heat the water you use in at this facility. (*Show pictures and/or diagrams to make information more understandable.*)

The other type of active solar energy system that we use is photovoltaics. The word photovoltaics is a fancy term used for the technology that converts sunlight directly into electricity. When sunlight hits the solar cell panels, electricity is produced because electrons are forced to flow out of the cell

through electrical wires. Here you can see our photovoltaic system. *(Either have real example to show that audience can see and touch, or have up-close pictures that show what they look like.)* This system is what turns on the lights on your room *(use an appropriate example to ecotourism destination from which this presentation is being given)*.

Conclusion:

To end our talk, we have discussed the differences between nonrenewable fossil fuels and renewable solar energies. It is clear that our fossil fuel supplies are running out, so employing renewable energy acts as part of the solution. Renewable energy sources can be labeled sustainable because they can provide infinite and environmentally friendly sources of energy, and they help ensure that future generations inherit a quality environment free of harmful air and water pollution.

While visiting, explore the solar energy systems we integrated. When you get home, envision setting up solar systems of your own. Not only will you be helping to contribute to a healthier community, but you will save money as well on your bills. In the meantime, always remember to conserve energy by taking simple steps such as turning off lights when you leave a room, putting a sweater on instead of turning the heater on, hanging laundry out to dry on a warm day instead of using the dryer, and unplugging all unused appliances.

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